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# CLAIMS:

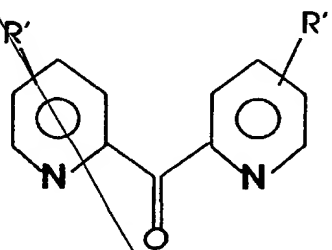
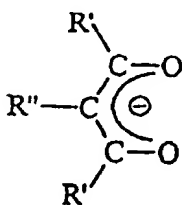
## Claims

1. A photoluminescent compound which comprises an organic complex of a transition metal, a lanthanide or an actinide and an organic ligand which photoluminescent compound emits light in the blue or purplish blue spectrum.

2. An electroluminescent compound which comprises an organic complex of a lanthanide or an actinide and an organic ligand which electroluminescent compound emits light in the blue or purplish blue spectrum when an electric current is passed through it.

3. A compound as claimed in claim 1 or 2 which comprises a complex of thorium (IV), yttrium (III), gadolinium (III), europium (II), terbium(IV), cerium(IV) and cerium (III) or a mixture of one or more of these.

4. A compound as claimed in claim 1, 2 or 3 in which the ligand is selected from



or

where R' maybe the same or different at different parts of the molecule and each of R'' and R' is a substituted or unsubstituted aromatic or heterocyclic ring structure or a hydrocarbyl or a fluorocarbon or R'' is fluorine or hydrogen or R' is copolymerised with a monomer or is an alkyl group preferably a -C(CH<sub>3</sub>) group, or is selected from

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TMHD,  $\alpha$ ,  $\alpha'$ ,  $\alpha''$ ,  $\alpha'''$  tripyridyl, bathophen (4,7-diphenyl-1,10-phenanthroline), crown ethers and cryptans.

5. A compound as claimed in claim 4 in which the ligand is selected from thorium (IV) bathophen, yttrium (III) tripyridyl and yttrium (III) TMHD, and europium (II) TMHD complexes.

6.  $\text{Eu(II)(TMHD)}_2$ .

10. 7. A composition which comprises an inert polymer and from 5% to 95% by weight of an electroluminescent compound as claimed in any one of the preceding claims.

15. 8. An electroluminescent device which comprises a transparent substrate on which is deposited an electroluminescent compound as claimed in any one of the preceding claims.

20. 9. An electroluminescent device as claimed in claim 8 in which the transparent substrate comprises a conductive glass or plastic material which acts as the anode.

25. 10. An electroluminescent device as claimed in claim 9 in which the transparent substrate comprises an indium tin oxide coated glass.

30. 11. An electroluminescent device as claimed in any one of claims 8 to 10 in which there is a hole transporting layer deposited on the transparent substrate and the electroluminescent material is deposited on the hole transporting layer.

12. An electroluminescent device as claimed in claim 11 in which there is a hole transporting material mixed with the electroluminescent material in a ratio of 5 to 95% of the electroluminescent material to 95 to 5% of the hole transporting compound.

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13. An electroluminescent device as claimed in claim 12 in which the hole transporting layer is an aromatic amine complex.

14. An electroluminescent device as claimed in claim 13 in which the hole transporting layer is poly(vinylcarbazole), N,N'-diphenyl-N,N'-bis (3-methylphenyl) -1,1' -biphenyl -4,4'-diamine (TPD) or polyaniline.

15. An electroluminescent device as claimed in any one of claims 8 to 14 in which there is a metal anode in contact with the electroluminescent material.

16. An electroluminescent device as claimed in any one of claims 8 to 15 in which there is a layer of an electron injecting material between the cathode and the electroluminescent material layer

17. An electroluminescent device as claimed in any one of claims 8 to 16 in which an electron injecting material is mixed with the electroluminescent material and co-deposited with it.

18. An electroluminescent device as claimed in claim 16 or 17 in which the electron injecting material is a metal complex or oxadiazole or an oxadiazole derivative.

19. An electroluminescent device as claimed in claim 18 in which the electron injecting material is an aluminium quinolate or 2-(4-biphenyl)-5-(4-tert-butylphenyl)-1,3,4 oxadiazole.

20. An electroluminescent device as claimed in any one of claims 8 to 19 in which there is a dye incorporated in the electroluminescent layer.

21. An electroluminescent device as claimed in 20 in which the dye is a fluorescent

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laser dye or an electroluminescent laser dye.

22. An electroluminescent device as claimed in any one of the preceding claims 8 to 20 in which the anode is a metal.

23. An electroluminescent device as claimed in claim 22 in which the anode is a aluminium, magnesium, lithium, calcium or a magnesium silver alloy.

24. An electroluminescent device as claimed in any one of the preceding claims in which there are a plurality of layers of electroluminescent material.

25. An electroluminescent device as claimed in any one of the preceding claims in which the layer of electroluminescent material is formed of two or more different electroluminescent compounds.

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